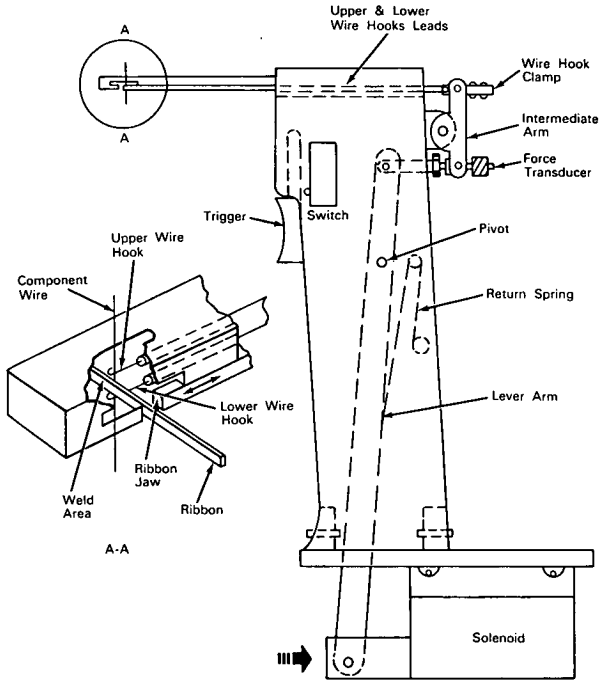
NASA TECH BRIEF

Force Controlled Solenoid Drives Microweld Tester



The problem: To test the integrity of a microweld joint between an electronic component lead wire and a wire ribbon. Previous microweld joint testers applied a combination of shear, torsion, and peel. What is desired is a straight-line tension test.

The solution: A solenoid-driven tester that applies only a tension stress to the microweld joint. The design provides a variable, measured force so that either destructive or nondestructive testing may be performed.

How it's done: A solenoid connected to a lever arm applies the tensile stress, and a force transducer continuously senses the applied force. The jaws of the tester and the ribbon jaws securely clamp the ribbon of the specimen to be tested. Wire hooks are looped around the component lead wire on either side of the weld. When the solenoid is energized, tension is applied to the weld through a lever arm arrangement that links the solenoid to both wire hooks. A wide range of stress forces (to destruction) is available through the rheostat controlled solenoid.

A force transducer mounted on the intermediate arm connection continuously senses the force applied to the weld joint. Readout is on a dc milliammeter.

Notes:

1. This device has been used to test weld integrity destructively or nondestructively on components both installed and not installed in modules.

(continued overleaf)

2. This innovation should be of value in quality control where future operating stresses can be predicted.
3. Inquiries concerning this innovation may be directed to:

   Technology Utilization Officer
   Western Operations Office
   150 Pico Boulevard
   Santa Monica, California, 90406
   Reference: B65-10182

Patent status: NASA encourages commercial use of this innovation. No patent action is contemplated.

Source: North American Aviation Company under contract to Western Operations Office (WOO-125)